

REMARKS/ARGUMENTS

Claims 26, 27, and 32-49 are pending. Claim 26 has been revised to refer to means for bonding or integrally joining the die/electronic part and the heat spreader. The terms “bonding” and “integrally joining” are intended to refer to physically attached or connected elements, and not to loose elements that are held together merely by pressure.

New independent Claim 39 tracks the language of Claim 26 and finds support in original Claim 1. However, the last step of this claim does not employ means-plus-function language, but specifies that the die/electronic part and the heat spreader are bonded or integrally joined by solder, soft solder, synthetic resin adhesive, or integrally joined by a diffuse junction method. Support for this language is found in the specification on page 5, lines 2-24.

New dependent Claims 40-48 track the language of the previous dependent claims and find support in the original claims. New Claim 49 finds support in original Claims 1 and 7-9. Accordingly, the Applicants do not believe that any new matter has been introduced.

The Applicants thank Examiner Vortman for the courteous and helpful interview of November 12, 2005. The main concern was that the term “joined” had been construed broadly as reading on the prior art devices where the die/electronic part and heat spreader are held or contacted together. To distinguish the invention, the term “joined” has been replaced by “bonded or integrally joined” to indicate parts which are not merely contacted or held together, but which are physically bonded together.

Rejections - 35 U.S.C. § 102(b) and 103(a)

Claim 26, 27 and 34 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,317,322 to Ueki et al and Claims 35-38 were rejected under 35 U.S.C. §103(a) as being unpatentable over the same reference. The Applicants traverse these

rejections since Ueki does not disclose or suggest an electronic device comprising “means for bonding or integrally joining the die or electronic part to the heat spreader so that thermal stress that causes separation of the die or electronic part and the heat spreader does not occur” as required by Claim 26.

The present invention overcomes the problem of electronic component separation caused by thermal stress as described in the specification on page 2, lines 19-24. The present invention overcomes this problem by bonding or integrally joining the electronic part (or die) and heat spreader (page 2, lines 25-26) in a way that minimizes thermal stress so that the separation of the electronic parts does not occur.

On the other hand, the parts of the device disclosed by Fig. 9 of Ueki are not bonded or integrally joined at all. According, to col. 2, lines 54-*et seq.* these parts are merely contacted and heat transfer grease is applied between them. Ueki discloses the need to have “highly preciseness in size” (line 55) and “flatness of the contact surface” (lines 61-62) to accomplish this objective. Thus, Ueki does not disclose all the elements of the present invention, specifically the requirement for bonding or integrally joining the electronic part and the heat spreader, and cannot provide a reasonable expectation of success for the present invention which bonds or integrally joins these elements in a way to minimize thermal stress and prevent their separation.

The Applicants submit that Ueki does not disclose or suggest bonding or integrally joining the electronic part and heat spreader and provides no suggestion at all to select an electronic part (or die) component and a heat spreader component that have about the same coefficients of thermal expansion such that they do not generate significant thermal stress. The Official Action (page 4) indicates that the die or electronic part (52) and the heat spreader components (50) are selected to have about the same coefficients of thermal expansion. However, a key word search of Ueki shows that the words “coefficient” and

“separation” do not appear in the patent. While col. 2, lines 26-30, indicates it is important to contact the cooling pipe 7 with the heat generating part 52 which is to be cooled in least heat resistance, the device of Fig. 9 as described by Ueki does this by carefully controlling the geometry of the parts (as described in more detail in col. 2, lines 32-*et seq.*) and not by bonding or integrally joining parts having the same coefficients of thermal expansion.

Moreover, these rejections would not apply to Claims 39-49 which require specific types of bonding, such as soldering or soft soldering, not disclosed or suggested by the prior art.

Accordingly, the Applicants respectfully request that these rejections now be withdrawn.

CONCLUSION

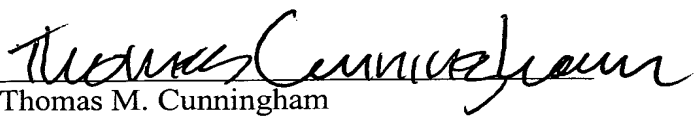
In view of the above amendments and remarks, the Applicants respectfully submit that this application is now in condition for allowance. Early notification to that effect is respectfully requested.

Respectfully submitted,

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